

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

Project Screwworm Research Date Nov. 15, 1937

Author Roy Melvin

TITLE

PRELIMINARY STUDIES WITH

TAGGETE OIL

MISCELLANEOUS REPORT NO. 1

SCREWORM RESEARCH LABORATORY

MENARD, TEXAS.

On November 5, 1937, we received a sample of "Tagette Oil" from Mr. Parman, bearing the following identification marks:

"Tagette Oil from J. R. Watkins Co.
Winona, Minn. Received 10-15-37
Uvalde, Tex. Divided and mailed
to Drs. E. W. Laake, Dallas, and
Roy Melvin, Menard, 11-3-37.
D. C. Parman

Monnig¹ concluded that "Tagette Oil" had fly repellent properties, and at Dr. Bishopp's request, preliminary tests were conducted, the results of which follow.

1. Repellent Properties.

Case No. 1. (Nov. 6, 1937) "Tagette Oil" was applied to a necrotic wound on a goat, in which C. americana had developed and dropped normally the day before. Although the maximum air temperature November 6 was 77⁰F., two C. americana egg masses and several thousand eggs of secondary species (later determined as C. macellaria and Phormia) were present at 4 p.m., six hours after treatment.

Twenty-four hours after treatment, some 500 young C. americana larvae had established in three distinct pockets, and several thousand larvae of secondary species were milling around the edge of the wound.

¹Onderstepoort Journal of Veterinary Science and Animal Industry, Volume 7, Number 2, October, 1936, pp. 419-430.

On November 2, 1937, we received a sample of "Tobacco #11"

from Mr. Hansen, bearing the following identification number:

"Tobacco #11 from J. B. Hansen Co.
Shannon, Tenn. Received 10-15-37
Weight, 100 lbs. and sealed
to Mrs. E. J. Hansen, Dallas, Tex.
Box 10111, Houston, 11-2-37
J. B. Hansen

Young¹ considered that "Tobacco #11" had the repellent properties,

and at Mr. Hansen's request, preliminary tests were conducted, the

results of which follow.

1. Repellent Properties.

From No. 1 (Nov. 2, 1937) "Tobacco #11" was applied to a

noctuid found on a host, in which C. pyralis had developed

and dropped normally the day before, although the maximum

its temperature between 2 and 77° F., two C. pyralis were

found and several thousand eggs of noctuid species (later

determined as C. pyralis and C. pyralis were found as a result.

and about 1000 eggs.

Twenty-four hours after treatment, when the pupae of

C. pyralis larvae had established in their natural position,

and several thousand larvae of noctuid species were killed

around the edge of the pupae.

¹Undergraduate Journal of Veterinary Medicine and Animal Husbandry
Volume 2, Number 2, January, 1938, pp. 41-42

Case No. 2. (Nov. 6, 1937) A dry, scabbed-over wound about $1\frac{1}{2}$ inches in diameter was treated with "Tagette Oil." Twenty-four hours later the wound was infested with some 400 C. americana larvae. It is believed that the "Tagette Oil" loosened the scab and made the wound more vulnerable.

Case No. 3. (Nov. 6, 1937) Gravid C. americana from our breeding stock were placed on a fresh wound that had been treated with "Tagette Oil." They did not hesitate to lay, the eggs hatched, and the resulting larvae established.

2. Larvicide

In Case 2 under repellents above, the larvae were treated with "Tagette Oil" when approximately one day old. Over 50% of the larvae survived the treatment.

"Tagette Oil" showed no toxicity at all to five-day-old larvae in wounds.

In dipping tests where grown C. americana larvae were submerged momentarily in the oil, and then transferred to sand jars, 54.5% emergence occurred, whereas 66.5% emergence occurred in untreated checks (200 larvae, 4 jars of 50 each, per treatment). This rather low percent emergence in both cases was believed to be due to rushing the pupal development at high temperature.

Case No. 2. (Nov. 6, 1937) A dry, nearly-dry wound
about 1 1/2 inches in diameter was treated with "Tegrete Oil".
Twenty-four hours later the wound was infested with some
400 G. merganser larvae. It is believed that the "Tegrete
Oil" incased the eggs and made the wound more vulnerable.
Case No. 3. (Nov. 6, 1937) Gravid G. merganser from one
breeding stock were placed on a treat wound that had been
treated with "Tegrete Oil". They did not hesitate to lay,
the eggs hatched, and the resulting larvae established.

2. Larvicide

In Case 2 under repellents above, the larvae were
treated with "Tegrete Oil" when approximately one day
old. Over 50% of the larvae survived the treatment.
"Tegrete Oil" showed no toxicity at all to five-day-
old larvae in wounds.

In dipping tests where Gravid G. merganser larvae were
withheld momentarily in the oil, and then transferred to
fresh jars, 54.5% emergence occurred, whereas 66.5% emergence
occurred in untreated checks (500 larvae, 4 jars of 50 each,
per treatment). This rather low percent emergence in both
cases was believed to be due to rushing the pupal develop-
ment at high temperatures.

3. Ovicide

Five thousand eggs less than three hours old and 5000 eggs turning dark (Nearly ready to hatch) were dipped momentarily in "Tagette Oil" and placed on moist paper for further development. No hatch occurred in the oil-treated eggs, whereas the checks in both cases hatched 100%.

Respectfully submitted,

Roy Melvin
Roy Melvin,
Assoc. Entomologist.

Nov. 15, 1937.

